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# *Scaevola xanthina* (Goodeniaceae), a new yellow-flowered species from the south coast of Western Australia

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## Abstract

Shepherd, K.A. & Hislop, M. *Scaevola xanthina* (Goodeniaceae), a new yellow-flowered species from the south coast of Western Australia. *Nuytsia* 24: 95–99 (2014). *Scaevola xanthina* K.A.Sheph. & Hislop, a new species readily distinguished by its prostrate habit and yellow flowers, is here described. This species is geographically restricted and is currently only known from Mount Manypeaks Nature Reserve. It is listed according to Department of Parks and Wildlife Conservation Codes for Western Australia Flora as a Priority Two taxon under the phrase-name *Scaevola* sp. Waychinicup (E.M. Sandiford EMS 1336). Images and an amendment to the *Flora of Australia* key to *Scaevola* L. are included.

## Introduction

In February 2007, Albany-based botanist Libby Sandiford collected a distinctive, yellow-flowered *Scaevola* L. during a Department of Environment and Conservation (now Department of Parks and Wildlife) Priority Flora survey. The taxon was found in a gully near the coast in the Mount Manypeaks Nature Reserve, east of Albany, Western Australia. Phrase-named as *Scaevola* sp. Waychinicup (E.M. Sandiford EMS 1336), the taxon was not collected again until 2013, when more than 100 plants were discovered by Damien Rathbone during another departmental survey of the area. It is surprising that such a distinctive species has remained undetected for so long. It was initially postulated that *Scaevola* sp. Waychinicup may be a short-lived fire ephemeral. However, as the recent population was found in a long unburnt area, it is more likely that this species simply has a very restricted distribution in a relatively inaccessible part of the south coast.

Yellow flowers are uncommon in the genus *Scaevola*. While a number of species have flowers with a component of yellow, for instance in the throat of blue- or cream-flowered species, only two other Western Australian species, *S. globosa* (Carolin) Carolin and *S. tomentosa* Gaudich., have flowers that are mostly yellow in colour. While a phylogenetic analysis of plastid molecular data suggested that the infrageneric classification of *Scaevola sensu* Carolin (1992) was not well supported (Jabaily *et al.* 2012), it would still be useful to sequence the new species to elucidate its closest relatives. Unfortunately, a recent attempt to extract DNA from leaf material (*E.M. Sandiford* EMS 1336) was unsuccessful. Morphologically this new species clearly falls within the largest infrageneric section *Xerocarpa* G.Don.; however, its placement at the subsectional level is problematic. Based on Carolin's (1992) *Flora of Australia* treatment this species keys to subsect. *Parvifoliae* Carolin on account of having glabrous rather than hairy anthers but in its general morphology, especially the long-pedunculate



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flowers and large bracteoles, it most closely resembles various members of subsect. *Pogonanthera* (G.Don) Carolin, such as *S. phlebopetala* F.Muell. or *S. pilosa* Benth. Furthermore, *S. hookeri* (Vriese) F.Muell. ex J.D.Hook., a prostrate herb found at higher altitudes in Eastern Australia that is also included in subsect. *Pogonanthera*, has glabrous anthers. While infrageneric relationships within *Scaevola* require further clarification, it is clear that the unique combination of prostrate habit, dense indumentum on the stems and leaves, elliptic bracteoles, sepals < 1 mm long, glabrous anthers and yellow flowers readily distinguish *S. xanthina* K.A.Sheph. & Hislop from all other species and, as such, it is described herein as new.

## Methods

This paper is based on the examination of specimens in the Western Australian Herbarium (PERTH). Characters were scored from pressed specimens and rehydrated material. Definitions of terms follow Carolin (1992) and Holland and Boyle (2002), where 'bract' refers to 'leaves' at the base of the peduncle and 'bracteoles' demarcate the base of the pedicel above and peduncle below. Precise localities of *S. xanthina* are withheld due to conservation concerns.

## Amendment to the Flora of Australia Key

The *Scaevola* key in *Flora of Australia* (Carolin 1992) Group 1 should be amended at Couplet 11 (p. 87) as follows:

**12:** Stems without conspicuous ridges; cauline leaves well developed ..... **12a**

**12a.** Corolla yellow; sepals < 1 mm long ..... **S. xanthina**

**12a:** Corolla various shades of blue, violet or purple, sometimes yellow in the throat; sepals ≥ 2 mm long ..... **15**

## Taxonomy

**Scaevola xanthina** K.A.Sheph. & Hislop, *sp. nov.*

*Type*: Mount Manypeaks, Western Australia [precise locality withheld for conservation reasons], 5 December 2013, *D.A. Rathbone* DAR 1019 (*holo*: PERTH 08526354; *iso*: CANB, PERTH 08526362).

*Scaevola* sp. Waychinicup (E.M. Sandiford EMS 1336), Western Australian Herbarium, in *FloraBase*, http://florabase.dpaw.wa.gov.au [accessed 25 February 2014].

*Prostrate* sub-shrub, with multiple, spreading, woody branches, *c.* 0.15 m high, 0.9–1.5 m wide; stems terete with a dense indumentum of mostly patent hairs with pale brown hairs, 0.7–1.6 mm long and shorter, usually white hairs, 0.1–0.4 mm long. *Leaves* alternate, cauline, shallowly antrorse to shallowly retrorse, narrowed to a petiole, 2–6 mm long; lamina elliptic to ovate, 11–60 mm long, 5–30 mm wide, apex rounded, base tapered, margins entire to crenulated, flat; discolorous, adaxial surface with scattered to moderately dense, white and pale brown hairs, 0.2–2.5 mm long, abaxial surface densely hairy with white and pale brown hairs, 0.2–1.6 mm long. *Inflorescence* a raceme; bracts as for cauline leaves; peduncle 5–14 mm long; bracteoles foliose, elliptic, 5.5–16.0 mm long, 2.2–7.0 mm wide; petiole to 5.0 mm long. *Sepals* free and markedly unequal, triangular, 0.2–0.9 mm

long, with dense, simple hairs. *Corolla* 8.5–18 mm long, yellow with reddish brown markings in the throat; outer surface with moderately dense, white and brown hairs, 0.2–1.6 mm long; inner surface with scattered, simple hairs towards the throat, barbulae papillose, 0.5–0.8 mm long; tube almost split to the base, fused 0.3–0.8 mm; lobes ± equal, acute, 4.2–8.5 mm long, 0.7–2.1 mm wide, wings ± equal, 3.7–6.0 mm long, 0.7–1.5 mm wide, ending 0.5–0.6 mm from the lobe apex. *Stamen* filaments linear, 2.8–5.0 mm long, 0.2–0.3 mm wide; anthers narrowly oblong, 0.6–1.0 mm long, glabrous. *Ovary* 2-locular, 1.7–2.1 mm long, with dense hairs, 0.1–0.5 mm long; septum complete, ovules 1 per cell. *Style* 6.3–6.5 mm long, with scattered, white hairs, 0.5–1.6 mm long towards the apex; indusium depressed-obovate, 0.8–1.7 mm long, 1.6–2.6 mm wide, with moderately dense, long, white hairs, 0.5–1.6 mm long and dense, white bristles around the lips, 0.25–0.5 mm long. *Fruit* elliptic to narrowly obovate, 4.0–4.8 mm long, 1.9–2.5 mm wide, with dense hairs, 0.1–0.6 mm long and straight hairs at the base, 0.7–0.9 mm long, ribbed at maturity. (Figure 1)

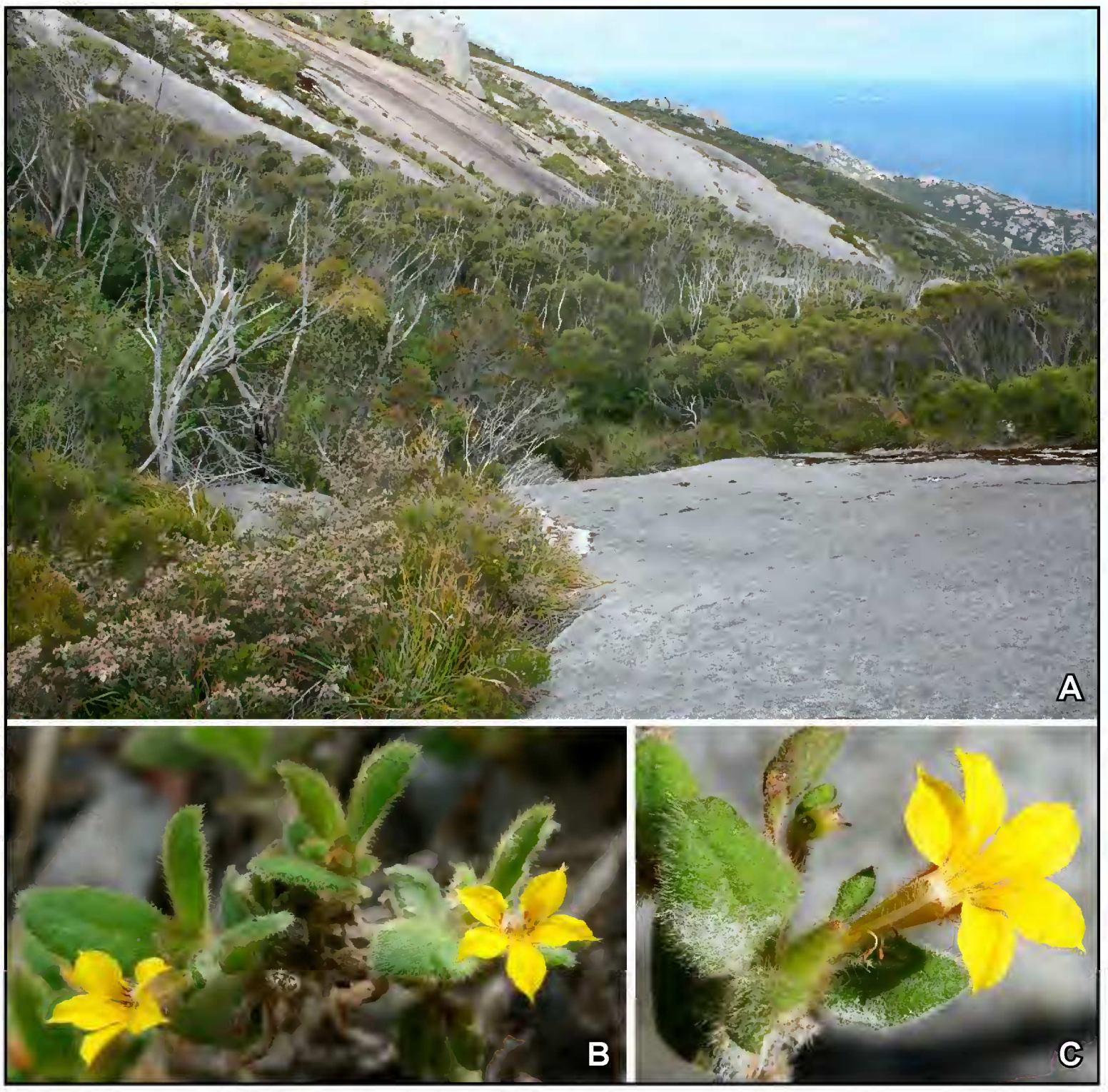


Figure 1. *Scaevola xanthina*. A – typical habitat in a gully amongst large granite outcrops in the Mount Manypeaks region; B – flowering plant showing the large, leaf-like bracteoles; C – bright yellow flowers that distinguish this species. Images: D. Rathbone.

*Diagnostic features*. This species is readily distinguished from all others in the genus by its prostrate habit, dense indumentum on the stems and leaves, leaf-like, elliptic bracteoles, sepals < 1 mm long, glabrous anthers, bright yellow flowers with reddish brown markings and acute corolla lobes. The corolla wings are wide (0.7–1.5 mm) and taper to an acute angle well below the lobe apex, so producing a narrow apical extension 0.5–0.6 mm long (Figure 1C).

*Other specimen examined*. WESTERN AUSTRALIA: [locality withheld for conservation reasons] 14 Feb. 2007, *E.M. Sandiford* EMS 1336 (PERTH).

*Phenology*. Flowering and fruiting material collected in December and February.

*Distribution and habitat*. This species is currently only known from the Mount Manypeaks region on the southern coast of Western Australia. It is found in gullies among granite outcrops (Figure 1A) associated with *Eucalyptus megacarpa*, *Agonis flexuosa*, *Hakea elliptica* and *Lepidosperma*.

*Conservation status*. Listed as Priority Two under Department of Parks and Wildlife Conservation Codes for Western Australian Flora (Smith 2013), under the name *Scaevola* sp. Waychinicup (E.M. Sandiford EMS 1336).

*Etymology*. The epithet is derived from the Greek *xanthos* (yellow) and refers to the bright yellow flowers that distinguish this species.

*Affinities*. *Scaevola xanthina* broadly resembles some Western Australian species of subsect. *Pogonanthera*, such as *S. phlebopetala* and *S. pilosa*. These species are readily distinguished from *S. xanthina* as they have scattered to moderately dense hairs on the stems and leaves (vs. a dense indumentum), sepals ≥ 2 mm (vs. < 1mm) and blue, mauve or deep purple flowers with a yellow throat (vs. yellow with reddish brown markings) and anthers that are hairy at the apex (vs. glabrous). *Scaevola hookeri* is similar to *S. xanthina* in being a prostrate shrub with sepals < 1 mm and having glabrous anthers, but this species has generally smaller flowers 5–8 mm long (vs. 8.5–18 mm long) that are white or blue with a yellow throat (vs. yellow with reddish brown markings in the throat). The only species in subsect. *Pogonanthera* that has acute corolla lobes is *S. tenuifolia* Carolin, a short-range endemic from Fitzgerald River National Park; however, the latter is quite dissimilar in other important respects having linear, revolute leaves and blue to mauve flowers.

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